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ABSTRACT

A literature review was conducted to ascertain the needs of the Appalachian Region. The introduction to the review provides an overview of the characteristics of the Appalachia region and the roles of the Appalachia Regional Commission and the Appalachian Educational Satellite Project. The methodology section discusses the method used to complete the literature search. The next five sections contain a review of the literature regarding Appalachia's needs in education, medical and health services, government, business and industry, and human resources and services. The last section contains conclusions and recommendations for further study. (EMH)

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REVIEW OF THE LITERATURE:

APPALACHIAN NEEDS IN FIVE PROGRAMMING AREAS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Prepared by

Donna M. Mertens

and

William J. Bramble

June, 1976

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The Technical Report Series of the Appalachian Education Satellite Project is edited and published by the RCC Evaluation Component at the University of Kentucky, Lexington, Kentucky.

The purpose of this series is to document and disseminate information about the design, implementation and results of the AESP experiment.

William J. Bramble and Cathy Hensley

Editors

TECHNICAL REPORT SERIES

1. AESP Data Base Information: Rationale, Data Collection Procedure, Interpretation of Results. Prepared by William J. Bramble, Claudine Ausness, Larry Harding and Robert Wetter. Winter 1973.

2. An Experiment in Educational Technology: An Overview of the Appalachian Education Satellite Project. Prepared by Claudine Ausness and Betty Bowling. March, 1974.

3. Formative Evaluation Study for AESP Diagnostic and Prescriptive Reading Courses. Prepared by William J. Bramble, Claudine Ausness and Robert Wetter. October, 1974.

4. The Evaluation Design: Summer Courses, 1974. Prepared by William J. Bramble, Claudine Ausness, Robert Wetter and Larry Harding. December, 1974.

5. Performance of AESP Transmission/Reception Equipment (Summer and Fall, 1974). Prepared by William J. Bramble, Claudine Ausness and James R. Freeman. July, 1975.

6. Student Ratings of Instructional Activities: Diagnostic and Prescriptive Reading Instruction, Summer, 1974. Prepared by Rodger Marion, William J. Bramble, Robert Wetter and Cathy Whitton. July, 1975.

7. Student Ratings of Instructional Activities: Career Education in the Elementary Grades, Summer, 1974. Prepared by Larry Harding, William J. Bramble and Rodger Marion. August, 1975.

8. Student Achievement: Diagnostic and Prescriptive Reading Instruction Course, Summer, 1974. Prepared by William J. Bramble, Rodger Marion and Claudine Ausness. August, 1975.

9. Student Achievement: Career Education in the Elementary Grades, Summer, 1974. Prepared by Rodger Marion, William J. Bramble and Claudine Ausness. August, 1975.

10. Cost Estimation Model for Alternative Course Formats and Delivery Modes. Prepared by William J. Bramble, Claudine Ausness, and Donna Mertens. September, 1975.

11. Summative Evaluation of Career Education in the Secondary School Course, Fall, 1974. Prepared by Diane Maynard, Rodger Marion and William J. Bramble. September, 1975.

12. Summative Evaluation of Diagnostic and Prescriptive Reading Instruction K-6 Course, Spring, 1975. Prepared by William J. Bramble, Diane Maynard and Rodger Marion. September, 1975.

TECHNICAL REPORT SERIES

13. Review of the Literature: Appalachian Needs in Five Programming Areas. Prepared by Donna M. Mertens and William J. Bramble. June, 1976.

14. Results of Appalachian Needs Assessment Conferences. Prepared by Donna M. Mertens and William J. Bramble. June, 1976.

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INTRODUCTION

Appalachia as a Land of Contrast

Appalachia is a land of contrasts. The mountains that are one of nature's finest handiworks and that serve as repositories for many of the nation's natural resources, also serve as barriers between the Appalachian people and the outside culture. The terrain and the sparseness of the population have impeded progress in many essential areas such as education, health, and economic development. It is just these characteristics of a dispersed population, difficult terrain, educational and health problems, and low per capita income that impede delivery of information and services by traditional means.

Geographic Make-Up of Appalachia

The Appalachian Region encompasses 397 counties and includes all or part of thirteen states: Alabama, Georgia, Kentucky, Maryland, Mississippi, Ohio, New York, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia. As of 1975, the population of the portions of the states designated as Appalachia by the Appalachian Regional Development Act of 1965 was 18,065,000 (Changes in Appalachia since 1965, 1976).

Appalachia's population is generally more scattered and less concentrated than the national population. In 1970, 60 percent of the nation lived in large urban areas, while in Appalachia only 30 percent of the people lived in large urban areas. In contrast, 45 percent of Appalachia's population lived in dispersed areas, and only 22 percent of the nation lived in such

areas. This emphasizes the infeasibility of delivering information and services to the Region by traditional means (Whitehead, 1975).

Appalachian Regional Commission

The Appalachian Regional Development Act of 1965 established the Appalachian Regional Commission (ARC). ARC's initial authorizations included funding for a highway program, a water resource study and several grant-in-aid programs, including demonstration projects in health, land stabilization, timber development, mine area restoration, vocational education, and sewage treatment. The Appalachian Regional Development Act also provided supplemental grants and support for local development districts. Appropriations for ARC programs are presently made for highway funds and nonhighway funds which include health and child development, vocational education, supplemental grants, and mine area restoration.

In the early days of the ARC, the Appalachian Region was divided into four subregions: Northern, Central, and Southern Appalachia, and the Appalachian Highlands. In the Spring of 1973, economic indices pointed to the fact that, although all four subregions showed improvement in per capita income, Central Appalachia was still lagging behind the rest of the Region. In an attempt to adjust the allocations according to the needs of the states, the subregions were redefined as: Northern Appalachia, Southern Appalachia, and Central Appalachia. The Highlands area was conceptualized as an overlay of the three subregions and included land of a relatively high topography (1,000 feet or more above sea level) and the presence of recreation-related resources (Lewis, 1974). Northern Appalachia includes parts of New York, Pennsylvania, Ohio, and West Virginia; Central Appalachia includes parts of West Virginia,

Kentucky, and Tennessee; Southern Appalachia includes parts of Mississippi, Alabama, Georgia, South Carolina, North Carolina, Tennessee, and Virginia; the Highlands includes parts of New York, Pennsylvania, Maryland, West Virginia, Virginia, Kentucky, and Tennessee.

Since ARC's establishment, many changes have occurred in the Appalachian Region in terms of the per capita income, the poverty level, migration, employment, education, and health. While notable progress has occurred in these areas, many problems still remain. The per capita income in Appalachia rose more rapidly than in the nation as a whole for the 1965 to 1973 time period. Although still well below the U.S. average, Appalachia's per capita income increased from $2,178 in 1965 to $4,107 in 1973. The national per capita income in 1973 was $5,041. These estimates were prepared by the Bureau of Economic Analysis, U.S. Department of Commerce (Changes in Appalachia since 1965, 1976).

Despite this gain, wide disparities in per capita income still exist in the Region. While Central Appalachia's per capita income grew more rapidly than that of the U.S., it continues to be the furthest below the nation - its per capita income remains only 60 percent of the national average. Only four of the 397 counties in Appalachia have per capita incomes above the national average (Pickard, 1975).

Another mark of progress is the decrease in Appalachia's poverty population since 1960 from 31 percent of the total population to 18 percent. While this represents a 41 percent decline in poverty, Appalachia continues to harbor a large proportion of poverty stricken people. In 1970, 3.2 million of its 18 million inhabitants lived in poverty, and this 18 percent incidence is higher than the national average of 14 percent. Central Appalachia's poverty incidences in 1970 was placed at 35 percent (Whitehead, 1975).

Other areas that have shown progress include: employment, health, and education.

While the Region still has a high unemployment rate, it has seen a significant increase in the number of jobs between 1965 and 1972. In the health area, the Region has increased the physician population rate from 92 for every 100,000 residents in 1963 to 100 per 100,000 in 1971. While this indicates an improvement, it is still well below the national average of 154 per 100,000 in 1970. In education, as of 1960, only one-third of the Region's adult population had completed high school. By 1970, 44 percent of Appalachia's adult population had a high school education. Yet the national average in this regard was 52 percent and the Region's adult population remained one full school year below the national average (Whitehead, 1975).

Appalachian Education Satellite Project

In 1971, ARC conceptualized an educational technology experiment that eventually became known as the Appalachian Education Satellite Project (AESP). Funded by the National Institute of Education, AESP was one of a group of experiments developed for the Health/Education Telecommunications (HET) experiment, under the technical supervision of the National Aeronautics and Space Administration (NASA).

During its initial phase (1973-1975), the Appalachian Education Satellite Project conducted an experiment to determine the feasibility of delivering courses via satellite to sparsely populated areas in Appalachia. The results of the experiment are documented in the AESP technical report series. (See list at the front of this report.) A summary of these results is provided in recent articles in Appalachia, American Education and Journal

of Educational Technology Systems (Bramble, Ausness, and Goldstein, 1976; Bramble and Ausness, 1976; Bramble, Hensley, and Goldstein, 1976).

Due to its innovative nature, AESP was limited in scope and the number of participants was modest during this initial phase. AESP served 48 counties in 8 of the 13 Appalachian states: Alabama, Maryland, New York, Pennsylvania, North Carolina, Tennessee, Virginia and West Virginia. The population of the 48 counties is 2,101,120, or 11.53 percent of the total population in the 397 counties of the Appalachian Region. This area was chosen as representative of the Region in terms of the density of the population and such economic conditions as per capita income, percentage of the population below the poverty level, and the percentage of families on welfare (Bramble, Ausness, Harding, and Wetter, AESP Technical Report #1, 1973).

AESP delivered four graduate credit continuing education courses--two each in career education and reading instruction--to approximately 1200 Appalachian teachers and other educators. The topics for the courses were determined on the basis of a needs assessment sponsored by the ARC (Appalachian Research Report No. 12, 1970). Thirteen institutions of higher education provided credit for the courses.

The new educational delivery concepts utilized in the project involved a mix of human and technological resources. From its inception, AESP was a joint venture of the Division of Education of the Appalachian Regional Commission (ARC), a Resource Coordinating Center (RCC) located at the University of Kentucky, and Regional Education Service Agencies (RESAs) located in eight states. ARC was the prime contractor, fiscal agent and manager of the project. ARC provided to the AESP central staff a wide range of expertise, data and continuing contact with the Appalachian state apparatus, necessary for the

effective management of the project. The RCC located at the University of Kentucky, provided academic, evaluation and television expertise for planning, producing and broadcasting the courseware and for evaluating the courses and the overall success of the project. The RESAs operated the local sites during the implementation of the courses and served in an administrative capacity in the coordination of local resources. NASA provided the communications satellite technology and hardware which allowed AESP to broadcast over the entire Appalachian Region. The cooperative nature of the project afforded AESP valuable resources in the planning, production and dissemination of the courses and offered an organizational structure which facilitated cooperation among local, state and national organizations.

The first phase of AESP demonstrated the feasibility of using satellite based services in a cost-effective manner as a means of strengthening local education programs in Appalachia. In addition, the experiment provided a wealth of information in testing the design for future large scale resource sharing arrangements that would cut across local and state boundaries, utilizing sophisticated communication media for the delivery of services to remote locations.

Following this initial successful effort, AESP is entering a new phase that will see an expansion in the diversity of programming and the number and range of participants. This phase, as in the past, has begun with the assessment of needs throughout the Region.

The results of the literature survey combined with the needs assessment conferences (as reported in AESP Technical Report #14) will serve as a basis for deciding programming areas during the next phase of AESP. Data relative to local needs will be summarized on a subregional or regional basis,

and these need summaries will be the basis on which project-wide decisions will be made regarding the selection of programming.

The results of future AESP experiments designed around local assessments of needs should have a profound impact on the future of rural America. In addition to testing new approaches and formats with new services and equipment, AESP should provide answers to such questions as: "Can such a system be economically feasible in outlying rural areas?" and "How will such a system contribute to the economic development of the Region?"

Overview

The present literature review indicated that needs in Appalachia exist in diverse areas including education, medical and health services, government, business and industry, and human resources and services. This report is organized into eight sections. The Introduction provides an overview of characteristics of the Appalachian Region and the roles of the ARC and AESP. The Methodology section presents a discussion of the method used in the literature search as well as its limitations. The next five sections contain a review of the literature regarding Appalachia's needs in education, medical and health services, government, business and industry, and human resources and services. The last section contains conclusions and recommendations for further studies.

METHODOLOGY

Survey of the Literature

A survey of the literature has indicated a diverse collection of needs in the Appalachian Region. For the purpose of the present report, the needs are categorized into the broad areas of education, medical and health services, government, business and industry, and human resources and services.

The procedure used in the literature review began with a review of the research report series that was sponsored by the Appalachian Regional Commission. Although this series deals with many diverse topics in Appalachia, many of the reports are dated and no longer reflect the current state of the Region. In addition, the focus of many of the reports was not on existing needs in the Region. Only Appalachian Research Report No. 12 was specifically designated as a needs assessment, and it was limited to the needs of teachers in Appalachia.

A second major source of the needs in Appalachia were the reports prepared by the Center for Developmental Technology, Washington University Saint Louis, Missouri. Funding for the reports in this series came from various sources including the Appalachian Regional Commission, National Aeronautics and Space Administration and the National Science Foundation. While these reports were useful for providing a broad overview of the Region, they did not include comprehensive needs assessments.

The technical report series of the Appalachian Education Satellite Project provided information concerning the needs of the parts of Appalachia that participated in Phase I of the AESP experiment. RESA reports were also

used in this regard. Information about the entire population of Appalachia was obtained from U.S. Census data.

In order to get a more systematic view of the documented needs of Appalachia, a computer search was conducted using the Educational Resources Information Center (ERIC) system. The ERIC system consists of a compilation of research and research-related reports in the field of education that is under the auspices of the U.S. Department of Health, Education and Welfare, National Institute of Education. It is accessed by means of a computer tape produced by NIE that is stored at the University of Kentucky. The following descriptors were run against the general descriptor, Appalachia, in conducting the computerized literature search: Educational Needs, Health Needs, Information Needs, Manpower Needs, and Research Needs.

In order to ascertain further information concerning medical and health needs, a computer search of the MEDLINE system was conducted. The MEDLINE system is located at the National Library of Medicine at Bethesda, Maryland, and is accessed by means of a telephone connection between the University of Kentucky and the computers at the National Library of Medicine. MEDLINE consists of a compilation of research and research-related reports in the fields of medicine and health. The following descriptors were used in the computerized literature search: Continuing Medical Education, Evaluation of, and Assessment of. The overall results of the literature review indicated a number of broad needs as well as specific areas of interest within the broad needs.

Nature of Needs Assessment

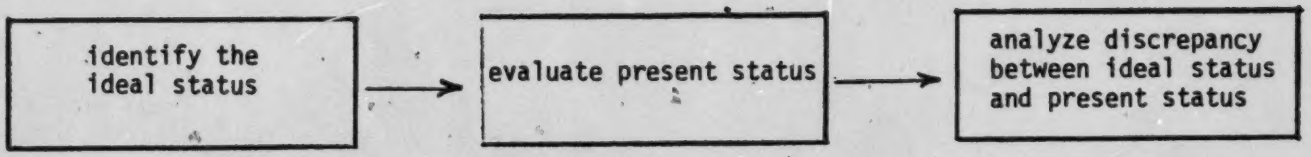
Witkin (1976) performed a comprehensive critical analysis of needs assessment models currently available for educational planning by local and state educational agencies and institutions of higher learning. She concluded that, "In spite of many similarities among instruments and procedures, there is no generally accepted or universal model... There is often a confounding of symptoms, causes, and solutions, especially in open-ended or non-goal-based models. 'Needs' are often stated as wishes or goals, and the learner and institutional goals are frequently confused (p. 5-6)."

Witkin suggested that most writers would agree that a complete needs assessment model should include at least four components: 1) consideration of goals; 2) procedures for determining the present status of these goals; 3) methods for identifying, describing, and analyzing discrepancies among goals and present status; and 4) methods for assigning priorities to those discrepancies.

Model for Needs Assessment

The following model is proposed in order to clarify the report of Appalachia's needs found in the literature. Two types of needs were reported: primary and secondary (see Figure 1). Primary needs are defined as discrepancies between an ideal status and the current status of a direct target population, e.g. reading achievement scores compared to a national norm for elementary students. This primary need definition parallels Witkin's description of a typical needs assessment model. The recognition of a primary need state is directly dependent upon the target population.

Model for the Identification of a Primary Need



Model for the Identification of a Secondary Need

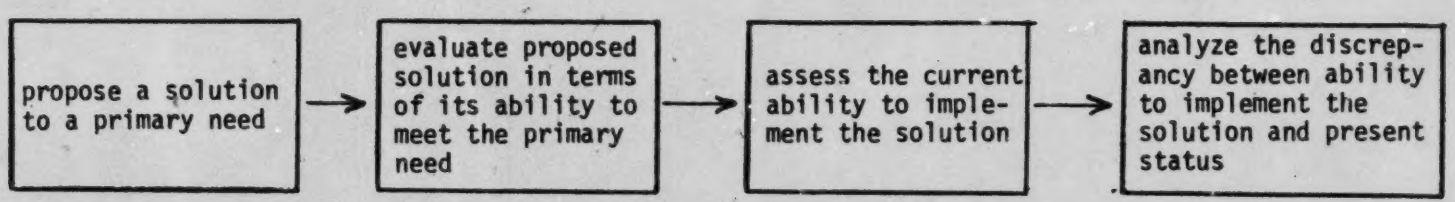

propose a solution to a primary need
evaluate proposed solution in terms of its ability to meet the primary need
assess the current ability to implement the solution
analyze the discrepancy between ability to implement the solution and present status

Figure 1 -- A Model for the Identification of Primary and Secondary Needs

A secondary need is defined as a discrepancy between the ability to implement a proposed solution to the primary need and the current ability relative to implementing the solution, providing that the proposed solution will meet the primary need. An example of a secondary need would be the need to teach an elementary teacher how to teach reading. The concept of secondary need clarifys Witkin's concern that needs are often confused with solutions, because the adoption of a solution can generate a secondary need. If the proposed solution can indeed meet the primary need, and a discrepancy exists between current skill level and the level necessary to implement the proposed solution, then a secondary need exists. However, if the proposed solution has not been evaluated in terms of its ability to meet a need, then a question remains as to the existence of the secondary need.

Limitations

The limitations of this review of literature arise from both the methodology employed in the study and the nature of the literature available. Methodologically, the possibility exists that all of the materials documenting Appalachia's needs have not been identified.

Of the literature which was reviewed, some of the reports of needs are dated, and no recent up-date of the situation is available. Some of the need areas have not been investigated in an extensive or indepth manner, therefore, precise definitions of existing conditions are impossible. In addition, some of the studies report data for states which are only partly in Appalachia. Where data from the Appalachian section is not reported separately, it is not possible to say to what extent the reported need applies to the Appalachian portion. A number of studies report conditions in on y a small section of Appalachia, making generalization of such reported needs for the whole Region difficult.

EDUCATIONAL NEEDS

Educational needs in Appalachia range from strong primary needs to questionable secondary needs which have arisen from the suggested solutions to meet primary needs. Such factors as high drop-out rate, a low number of completed school years, and poor scores on standardized tests evidence strong primary needs in Appalachia. The most frequently mentioned secondary need is inservice training for the regular classroom teacher. More specific inservice training needs have been suggested in the literature in the areas of reading, special education, early childhood education, information resources, career counseling, career education, and vocational counseling. Few of the secondary needs have been evaluated in terms of their abilities to meet the primary needs. In addition, assessment of the current ability to implement the solution and analysis of the discrepancy between the ability to implement the solution and the present status are generally nonexistent. Thus, the strength of many of the identified secondary needs rests on several unproven assumptions.

Overview of Educational Needs

In recognition of the importance of educational resources for the development of the Region, ARC established an Educational Advisory Committee which met for the first time on February 22, 1967 (Appalachia: Education for Tomorrow, 1971). The Committee was composed of an equal number of Governors and Federal appointees. The educational priorities that were recognized by the Education Advisory Committee were developed through cooperative planning

committees with members from each of the thirteen states. These groups met frequently and were involved in the design of the Committee's recommended priorities. These priorities provide an overview of the educational problems that were perceived to be most pressing in the Region in 1971. They included:

1) child development and early childhood education;
2) increased occupational relevance of the school curriculum:
3) provision of greater job relevant opportunities for training from high school through adult programs;
4) training of educational manpower, including teachers of modern occupations, early childhood education personnel, occupational guidance personnel, paraprofessionals and inservice training of instructional and administrative personnel.

A number of general indices suggest that primary educational needs exist in Appalachia. The dropout rate was reported to be 20 to 25 percent higher than that of the rest of the nation, and in some parts of the Region as high as 71 percent between first and twelfth grade (Morgan, Singh, and Niehaus, 1972). According to the report of the Education Advisory Committee in 1971, four Appalachian states reported having no psychological services personnel, and three reported having 16 or less. In addition, 13 percent of the teachers do not have complete certification as compared to the national level of 5.6 percent (Morgan, Singh, Rothenberg, and Robinson, 1975). Appalachian teachers receive $2,000 per year less than the national average. Also, per pupil expenditure is almost $200 below the national average.

Money for instructional programs is drastically reduced in some school districts where substantial consolidation has been achieved, and they must allocate a large percentage of their total expenditures for transportation because of low population density (Singh and Morgan, 1972).

The following sections of this chapter deal with the more specific educational needs and proposed solutions that have been identified in the literature. First, a report of a detailed needs assessment of inservice training needs is presented. This is followed by a review of less comprehensive assessments of inservice training needs for regular classroom teachers. The remaining sections review the literature concerning needs in the areas of early childhood education, special education, information resources, vocational education, career counseling, and career education.

Inservice Education for Classroom Teachers

In terms of inservice education needs for classroom teachers, Arthur D. Little, Inc. conducted a survey using a 20 percent random sample of 162,000 teachers in Appalachia that documented the main problems of the Region's teachers (Appalachian Research Report No. 12, 1970). Eighty percent of the teachers felt their training was sufficient in the application of educational theory, teaching methods, and training in the subjects they teach. The majority of the teachers indicated that they felt their training was not sufficient in methods for teaching disadvantaged students, knowledge of vocational opportunities open to their pupils, reading instruction, and curriculum planning and development. Both scientific equipment and laboratories and language laboratories were perceived as being inadequate. Although many of the teachers had recently taken a college course for credit, 11 percent

last took one 6 to 10 years ago, and 13 percent more than 10 years ago.

In addition to the needs for reading and career education instruction that were documented in the Little report, early childhood education was also recognized as a strong need. Based on the number of children under the age of six and the number of teachers needed to staff programs for these classes early childhood education and programs leading to certification of non-certified teachers were noted as needs. It was suggested that part of this need could be met by the training of paraprofessional teacher aides.

As part of a joint application for a Teacher Corps project, schools in five of the Appalachian states (Alabama, Tennessee, Maryland, New York, and Virginia) reported results of limited needs assessments (Israel, 1975; Peto, 1975; Graig, 1975; Jones, 1975; Berry, 1975). Some of these needs assessments were conducted with the educational personnel of only one or two schools. Taken alone, the results of such needs assessments would be quite meaningless. However, the results are of interest for two reasons. First, the individual schools are typical of other schools in Appalachia because they tend to share the following characteristics. They are located in predominately rural areas, and they have a high proportion of disadvantaged students. Few cultural opportunities are available for the population, and educational programs are relatively inaccessible for their teachers. Second, despite the limited nature of the needs assessments and the vast geographical distance between the five areas involved, similar patterns of needs emerged from the assessments.

In Alabama's Teacher Corps application, the results of a needs assessment conducted by the Top of Alabama Regional Education Service Agency in 1972 were reported for the Fort Payne, Alabama area (Israel, 1975). The procedures for the needs assessment were not stated in the application. Six

areas for improving the education of children in the Fort Payne area were reported as: 1) teaching slow learners, 2) diagnosing pupil needs, 3) updating subject matter content, 4) motivating pupils, 5) individually orienting instruction, and 6) motivating potential dropouts. Suggested solutions to these problems included improvement of skills in the areas of teaching reading and mathematics, diagnosing learning difficulties, and working with children from low income families. It was reported that students need more individualized and humanized instruction, more awareness of a responsible role in the community, and a greater career awareness. In addition, the involvement of parents in the education system was suggested as a desirable goal.

According to Maryland's Teacher Corps application, discussions were held in Cumberland, Maryland with members of the Regional Education Service Agency and the principal, teachers, and aides of West Side Elementary School to determine the needs of the school (Peto, 1975). Statistical studies of the students of West Side Elementary School demonstrate that deficiencies are present in mathematics, reading, and language arts skills. The basic problem identified was the need for individualizing the school program to provide for the specific needs of students. As a proposed solution to the above mentioned deficiencies, it was suggested that a diagnostic and prescriptive method be implemented that would facilitate matching teaching strategies to the "learning styles" of children, and provide the means for identifying real individual differences and reinforce in each student the unique importance of his personal identity. Aspects of the solution would require that teachers be able to motivate the student, utilize an inquiry approach, provide for "fast" and "slow" learners, and increase parent involvement.

The New York Teacher Corps proposal contained a report of a meeting of the entire elementary faculty at Westfield Academy and Central School with the Chautauqua County Board of Cooperative Educational Services (Graig, 1975). The report indicated that the students were extremely weak in language arts and all subjects relative to this area. Based on an examination of current teaching practices and suggestions for innovations and improvements in the curriculum, the following secondary needs were suggested. Teachers need to be taught to: 1) use a diagnostic and prescriptive individualized instruction mode; 2) develop communication skills in their students; 3) manage and individualize the classroom; 4) implement a criterion referenced system for reading; and 5) use a contract system for learning in language arts.

The application for a Teacher Corps project in Tennessee reported that results of standardized tests and an analysis of the performance of teachers, principals, and teacher's aides by school administrators in Campbell County indicated a need for improved preservice and inservice training for these three groups (Jones, 1975). Specific solutions suggested to meet these needs included training teachers to meet the needs of the disadvantaged and to acquire techniques for achieving greater parent involvement.

The Virginia Teacher Corps proposal reported that the Wise County School Division was aware that more effective programs for pre- and early adolescents (9-12 years of age) are needed (Berry, 1975). No evidence was presented that a systematic assessment of needs was conducted. The Wise County School Division expressed a desire to utilize an open access curriculum in Wise Elementary School. In order to implement an open access curriculum, it was reported that teachers, aides, and interns needed to demonstrate:

1) knowledge of alternative theories of child development and the ability to diagnose the developmental characteristics of children; 2) knowledge of exemplary theories of learning and the ability to prescribe learning style related to instructional objectives; 3) knowledge of alternative theories of elementary schooling and organizations, including interdisciplinary teaming, learning centers, individualized instruction, and open education; 4) knowledge of alternative curriculum instruction programs in mathematics, science, language arts, art, literature, reading, social studies, music, and physical education and the ability to implement selected programs; 5) the ability to exercise decision making skills in making instructional/curriculum choices that illustrate rationally consistent relationships between developmental characteristics of children, learning styles, and the goals of elementary schooling.

The needs expressed in the above proposals are not based on systematic needs assessments and they are based on a limited sample of Appalachia's population. The unsystematic methodology used tends to weaken the credibility of the results. Nevertheless, the reports are of interest because of the tendency of the schools involved to resemble other Appalachian schools and because of the common pattern of needs expressed in these five proposals.

One repeatedly proposed solution from these five sites is the individualization of instruction to meet the needs of the disadvantaged, the "slow" learner and the "fast" learner by utilizing a diagnostic and prescriptive approach. Improving communication skills, reading, and mathematics skills are other common problems. In addition, the desire to involve parents in the school system was frequently expressed. The reports suggested that these

proposed solutions generated the secondary needs of training teachers in the techniques necessary to implement the solutions.

Many of these concerns were reflected in the opinions of Appalachia's leaders at a conference sponsored by the Appalachian Education Laboratory (Appalachian's Sound Off on Educational Needs of the Region, 1971). The Appalachians proposed the following solutions to solve their educational problems: establishing open schools, training helpers for teachers, and educating children to be open to learning, flexible, adaptable, motivated, creative, and able to contribute to the system as useful citizens. Involving parents and the community in the schools is another suggested solution. In addition, the Appalachians expressed a desire to see the curriculum related to local problems, local culture and language.

Riddle (1971) analyzed the existing educational system in Appalachia and determined a number of needs for the students that are associated with the above-mentioned educational skills of the teachers. He concluded that the students had needs in the following areas: 1) social skills in order to deal with other individuals in decision making processes and in cooperative ventures which involve conflict and compromise; 2) psychological development in order to form an identity with emotional security, autonomy of self, self-awareness, and self-confidence; 3) cultural development in order to increase the variety of ideas to which the students are exposed. Riddle suggested that the school should emphasize the examination and clarification of values, the establishment of life goals, and the development of a realistic and positive self-concept.

Summary of Inservice Education Needs for Classroom Teachers

In summary, the needs assessment conducted by Arthur D. Little, Inc. in 1970 identified a number of educational needs concerning inservice training for teachers (Appalachian Research Report No. 12, 1970). Several years have passed since that report was published, and no systematic assessment of the educational needs of the Region has been conducted since that time. Although based on limited information, the following list suggests some of the consistently expressed problems:

1) A primary need exists to improve student's mathematics, reading, communications, and social skills.
2) Teachers need to be trained in the technique of individualizing instruction, especially to meet the needs of the disadvantaged.
3) Teachers need to be trained in the technique of involving parents in the schools.

Empirical data are not yet available as to the pervasiveness and seriousness of these needs throughout the entire Region.

In addition to the broad area of inservice education for the regular classroom teacher, more specific educational needs have been suggested in the areas of early childhood education, special education, information resources, career counseling, and vocational counseling. The following section is concerned with the areas of early childhood education and special education.

Early Childhood Education and Special Education

As mentioned earlier in this report, the Educational Advisory Committee of ARC recognized early childhood education as a priority need area (Appalachia: Education for Tomorrow, 1971). No systematic needs assessment that reflects the current need for early childhood education in the Region is available. In a proposal to the Office of Education (Bureau of the Handicapped), the Mineral County Board of Education with Project PUSH noted a severe need for early childhood education for the handicapped (PUSH outreach through Appalachian education telecommunications, 1975). Project PUSH is a demonstration project designed to provide services to handicapped preschool children. It was originally funded in 1971, and the Mineral County Board of Education presently assumes fiscal responsibility for PUSH.

In the above mentioned proposal the need for early childhood education for the handicapped is reviewed, and it was concluded that the need was both dramatic and urgent. This statement was based on the following factors:

1) The large number of Appalachian preschool children with handicapping conditions. Dunn (1973) estimates that 10 to 12 percent of all American children have a handicapping condition, and the handicapping index for Appalachian children is estimated at 20 percent. Based on the U.S. Department of Commerce, Bureau of Census data, there are approximately 1.6 million children, 0 to 6 years, living in the rural isolated areas of Appalachia. Therefore, it can be calculated that there are between 193,324 and 322,206 rural Appalachian children with handicaps.

2) The small number of formal programs to serve Appalachian handicapped preschool children. Precise data on the number of programs for handicapped preschool children were not available. However, based on data supplied by the Research Bureau of the Appalachian Educational Laboratory, the number of "normal" children enrolled in a formal preschool learning experience was 16.1 percent in rural Appalachia. Historically, the level of development of special education programs has been below that for "normal" children, therefore it seemed logical to conclude that less than 16 percent of handicapped preschool children are enrolled in formal programs.

3) Federal and state laws and regulations. The report contains excerpts of the federal and Appalachian state laws which mandate special education programs in Appalachian schools. The states have recognized the need for early intervention in the handicapped child's condition.

4) Need for trained professional and paraprofessional personnel to serve Appalachian handicapped preschool children. Based on an estimated 250,000 handicapped preschool children and the accepted ratio of 15 students per teacher for special education classrooms, the number of teachers needed is estimated to be 16,700. Nationwide, NEA has estimated that an additional 58,000 teachers are needed for preschool children requiring special education (Teacher supply and demand in public schools, 1975).

> A review of fifty colleges and universities in Appalachia indicated that none of the surveyed colleges and universities offered a major or minor study in the field of preschool handicapped children and only two of the universities offered a single course specifically designed to teach about handicapped preschool children.

In order to be an effective program for preschool handicapped children, the PUSH proposal outlined a number of areas that should be included. They identified the necessary content areas of such a program as self-help and language, cognitive, social, gross and fine motor development. In order to carry out such a project, the programs that are needed include psychological services, follow-up placement, nutrition, medical services, transportation, speech, and language development services. Active parent involvement is another important area.

The research of Wilcox (1972) supports the need for special education programs in Appalachia. He reviewed needs assessments conducted by the states of Kentucky in 1970, Tennessee in 1969, Ohio in 1970, and West Virginia in 1970, and concluded that a need exists for special education services for exceptional children. He also reviewed a survey conducted in 1971 by the Clinch-Powell Educational Cooperative in Tennessee of the exceptional children's educational needs in the Cooperative area. They identified the following problems: 1) lack of adequate number of certified personnel; 2) lack of adequate financial support; 3) lack of sufficient pupils to constitute a classroom unit; 4) lack of interest and support from school personnel, parents and the general public.

Another aspect of the education of exceptional children is the concept of mainstreaming. A need exists to educate regular classroom teachers, special education teachers, paraprofessionals, principals, and parents because handicapped children are being integrated into regular classrooms where teachers have no experience or training related to techniques for instructing them. Teachers designated as "Resource Room Teachers" have had no training or experience on how best to perform their tasks and interact with other educational personnel (Morse, 1975).

New federal legislation emphasizes the urgency for training all teachers in special education, not only in Appalachia, but in the entire nation. The recently passed Education for All Handicapped Act (PL 94-142) requires local school systems to provide procedural safeguards to insure that handicapped children are educated in the least restrictive educational setting. This is most frequently interpreted as providing mainstreaming programs for the mildly handicapped.

In summary, while the Educational Advisory Committee recognized a need for early childhood education in 1971, no information is available that reflects the current state of this need, except that which relates to early childhood education for the handicapped. The Mineral County Board of Education noted a need to train personnel to serve the Appalachian handicapped preschool children. Wilcox identified a need for training certified personnel to deal with exceptional children based on needs assessments conducted in 1969, 1970, and 1971 in four states, parts of which are included in Appalachia. Nevertheless, the recent trend toward mainstreaming suggests this need continues to exist and is even more pressing due to the immediate implementation of the mainstreaming approach.

Information Resources

Fuller access to library and other information resources is another area of possible need in Appalachia. A survey of site coordinators and faculty consultants from five Regional Educational Service Agencies (in Chautauqua, N.Y.; Cumberland, Maryland; Clinch-Powell, Tennessee, Wise, Virginia; and Huntsville, Alabama) indicated a desire to improve teachers' knowledge about and experience with library media resource centers. More specifically, the results of the survey suggested that teachers needed training in identifying and locating library and information sources, and in planning multi-media learning experiences which are possible through the use of information and library sources. In addition, a means of sharing resources by school districts, and regional personnel was indicated as desirable The results of the survey also indicated that teachers need experience in curriculum planning that involves using the library and other information sources (Larimore, 1974). The results of this survey are based on a very limited sample, and no further information concerning this type of educational need is currently available.

Career Education, Career Counseling, and Vocational Education

A number of research studies have pointed to a strong need for career education, career counseling, and vocational education in Appalachia (Appalachia: Education for Tomorrow, 1971; Hill, 1976; Lamar, 1974; Riddle, 1971; Singh and Morgan, 1972; and Morgan, Singh, Rothenberg, and Robinson, 1975). In this regard, the community members interviewed by the Appalachian Education Laboratory suggested a need for a program that provides employment concurrent with education, information on potential employment, and career education which would relate education more closely to the world of work

(Appalachian's Sound Off on Educational Needs of the Region, 1971).

Pratt (1972) surveyed the students in the public high schools in four counties in Northeast Alabama and concluded that high school counseling services in that rural Alabama area are either totally unavailable or grossly inadequate.

One of the reasons for inadequate career guidance is the lack of trained personnel to offer such services. In a review of the 48 counties that participated in AESP, the counselor-pupil ratio for the grades 9-12 varied from one counselor to 247 students to one counselor to 1,035 students. For grades K-8, 28 of the counties reported no counselors; the other 20 counties ranged from 1 to 399 to 1 to 16,841 (Bramble et al., AESP Technical Report #1, 1973).

Morgan, Singh, Rothenberg, and Robinson (1975), based on the 1968 report of the ARC's Educational Advisory Committee on the scope of vocational education in Appalachia, reported that the bulk of vocational enrollment within Appalachian secondary schools did not correspond to current and projected job openings. Not enough skilled labor was being produced to meet the jobs necessary to facilitate economic growth in Appalachia. The vocational schools tended to emphasize agriculture, distributive education, home economics, and office vocations. In both agriculture and home economics the employment prospects are not good. A greater emphasis should be placed on health, technical, and industrial vocations.

While the 1968 report is somewhat dated, comprehensive information concerning the state of vocational education in Appalachia at the present time is not available. However, in one community in a mountainous area of

northwestern North Carolina a need for skilled construction workers was recognized. An inadequate supply of skilled labor resulted from deficiencies in basic education and work preparation for non-college bound youth. A consortium was formed that included a public community college, a private junior college, several construction firms, and a large recreation-development firm. The students were recruited from the area. They were concurrently employed by a participating construction company and attended classes at the community college (Cooper, 1974). While this situation is documented for only one community in Appalachia, it does indicate a situation where a lack of vocational education resulted in a community need. The question remains unanswered as to how many other Appalachian communities face a similar shortage of appropriate vocational education.

MEDICAL AND HEALTH NEEDS

Medical and health services pose a special problem in Appalachia, not only in terms of continuing education for the medical and health personnel, but also in providing for the consumer's needs. The medical and health personnel include physicians, physician's assistants, nurses, mental health personnel, and allied health personnel. Consumers' needs include both education and services. While the literature confirms the existence of many primary medical and health needs, the proposed secondary needs are not supported by comprehensive assessments of the Region.

Overview of Health Problems in the Region

Many general indices suggest unmet medical and health needs in the Region. Whitehead (1975) noted that the physician population ratio improved from 92 per 100,000 in 1963 to 100 per 100,000 in 1971. Despite this improvement, serious health deficits remain. Shortages in physicians and supporting health manpower continue to plague the Region. In 1970, the national physician population ratio was 154 per 100,000, the Appalachian ratio was 100 per 100,000, or 65 percent of the national average. Appalachians continue to be afflicted with a high incidence of hepatitis, streptococcus, tuberculosis, measles, and rubella. Infant mortality continues at a rate higher than the rest of the nation. In 1972, the national rate of infant mortality was 18.5 deaths per 1,000 live births. In Appalachia, 71 of the counties had rates above 28 per 1,000, and in 21 of these, the rate was from two to six times the national average.

O'Brien (1972) analyzed the unmet or inadequately met health needs in Central Appalachia. His report represents one of the most current and comprehensive statements concerning the medical and health needs of the Region, although his results are not based on a systematic survey of the health personnel in the Region. He identified four unmet or inadequately met health needs in Appalachia. These included: 1) illness and accident prevention and detection, 2) primary health care delivery, 3) health manpower development, and 4) special health services such as physical rehabilitation, services for the mentally retarded, and speech and hearing therapy.

Illness and Accident Prevention

In order to meet the first need of illness and accident prevention and detection, O'Brien suggested a number of solutions which in turn generated a number of secondary needs, including a comprehensive program of consumer health education and health screening measures. Because of the isolation and lack of access to health professionals, many families have developed a traditional lore about disease and injury. An abundance of misinformation is present. O'Brien suggested that consumer education should consist of preschool and school health information, and information for individuals who have specific concerns such as diabetics, pre- and postnatal mothers, and the elderly. Also of particular concern in Appalachia is family health screening to detect diseases and disabilities, including black lung screening.

Another aspect of illness and accident prevention involves environmental health improvement. Homes without a public water supply or sewage system represent a public health problem. A need exists not only for consumer education in this area, but also for training paraprofessionals

to assess the situations and suggest improvements to lessen the threats to health.

Delivery of Primary Health Care

The second unmet need that O'Brien identified focuses on the delivery of primary health care. Because of the shortage of health care personnel, many times the nurse is faced with medical problems without the services of a physician. In terms of the delivery of primary health care, the nurse needs access to a physician when she needs a medical opinion or decision. In similar circumstances, the physician needs to be able to call upon a specialist in any medical field at any time and receive immediate advice. In order to accomplish these goals, an improved communication system for medical and health personnel is required throughout Appalachia.

Many of these same concerns were expressed by Brodell (1976) in an overview of the health needs of Appalachian Maryland. He expressed the need for health education programs for the general public to learn preventive medicine, to follow medical regimens, and to act wisely in decisions regarding health affairs.

Health Manpower Development

The third unmet or inadequately met need that O'Brien noted was health manpower development. He noted several aspects of this factor. First, the health or medical student in the field must maintain contact with the educational institution. Second, for dentists, pharmacists, and other health professionals, as well as physicians and nurses, ways must be found to encourage continuing professional development. Third, on-the-job training for para-professional health staff is essential.

> O'Brien summarized the plight of the Appalachian physician as follows: Practice in a small Appalachian community brings with it at least two significant disadvantages for a physician. His isolation from the major urban areas means that his opportunities for continuing his professional education are more limited than those of his urban colleagues. While the means of his remaining abreast of developments are technically the same as those of his fellow-doctors in cities--journals, professional meetings and refresher courses--it is much more difficult for him to take advantage of these opportunities. The country doctor also has to contend with another significant disadvantage--the absence of easy access to fellow practitioners and specialists for consultation (p. 30).

Because of the scarcity of physicians in Appalachia as noted above, nurses often are called upon to play a significant role in the delivery of primary health care. Large numbers of nurses are faced with the need to make a physical assessment of their client's health needs with insufficient training. The Conference on Primary Health Care in Appalachia (1975) confirmed the need for nurses to have access to organized learning activities in such areas as physical assessment. Site visits to seven Appalachian cities were made by the University of Kentucky College of Nursing and AESP representatives. At these meetings, 80 persons - nurses, health care agency representatives and educational agency personnel - confirmed the need for training nurses in physical assessment skills. The Appalachian nurses completed a questionnaire that indicated a need for

training related to the acquisition of a wide range of physical assessment skills (Bolte, 1975).

The training of allied health personnel to provide supportive services is another aspect of health manpower development. In particular, the emergency medical personnel require attention. For large parts of Central Appalachia, the necessary requirements for an emergency medical service are being addressed. Adequate emergency room facilities and staff, reliable fast-response ambulance transport, communications between the site of the emergency and the emergency room, and qualified emergency medical technicians are all recent developments in emergency medical service. However, O'Brien noted that the weakest link in the chain is recruiting, initial training, and continuing training of Emergency Room Technicians. The success of emergency medical care depends on the appropriate action of the emergency medical technician, on the scene of the accident, en route to the emergency room, and within the emergency room itself.

Provision of Special Health Services

The fourth and final factor that O'Brien noted as an unmet or inadequately met health need was the provision of special health services. Central Appalachia provides very few services for people with special needs such as the mentally retarded, or those requiring physical rehabilitation, or speech and hearing therapy. The distribution of Central Appalachia's population prohibits delivery of such services by conventional means. Alternative ways must be found to share this much needed information with the small primary care clinics and other community facilities, such as schools or even in the home.

Mental Health Problems

Mental health is another aspect of the well-being of a community, and in Appalachia, increased training of mental health workers is an important issue. As Swift, Decker, and McKeown (1975) note, ".....there is a growing interest in mental health problems, particularly those associated with the resurgence of the mining industry and the increased family and community stresses accompanying this change (p. 38)." As fundamental relationships among groups are altered and old patterns of life disrupted, mental health problems increase. Appalachia has more than its share of mental health problems which are not being met through present programs. McCarthy (1975) estimated that as many as 50 percent of Appalachians suffer from depression compared to a national average of 2-4 percent. A study by Cornell University found that 80 percent of the primary care visits by miners and their families were for problems induced by anxiety. The conditions that were most prevalent include anxiety, stress, depression, family and child related problems, and alcoholism. These are the areas in which mental health workers would need to demonstrate competence in order to provide the most needed services to the people of Appalachia.

Summary

In summary, the literature suggests a secondary need for improved consumer education, delivery of health services including access to consultants, and development of health manpower including continuing education. Except for the nurse's need for training in the area of physical assessment, specific secondary needs within the area of medical and health needs have not been documented. Extensive surveys of the physicians, nurses, mental health workers,

allied health personnel, and consumers are required to document specific needs for these groups. The general indices of health resources in the Region indicate that primary needs exist. While these problems have generally been identified, continued research is required before more specific needs can be identified.

GOVERNMENT NEEDS

Government operates at many levels in Appalachia, as it does across the nation. Federal, state, and local government personnel in Appalachia have many information needs that are enhanced by the isolation caused by the terrain. In Appalachia another unique level of government, the Local Development District (LDD), was instituted to help bridge the gap between the bigness of the state government and the smallness of local jurisdiction. While the LDD personnel also face similar information needs, it is difficult to separate the needs of the LDD personnel and those of local officials because the LDDs are composed of a number of local governments banded together. Extensive, systematic, and comprehensive investigations of the information needs of government officials at any level have not been conducted. Insight into their needs can be assessed from the roles of the various agencies. The majority of these suggested needs constitute secondary needs for information or training to help government officials more effectively fulfull their roles.

Role of the LDD

In 1975, 69 LDDs were in existence. Generally, the functions they perform include area-wide planning, area-wide coordination, facilitation of area-wide program and project efforts, public finance, management, planning technical assistance, and general program technical assistance. More specifically, their functions include: 1) providing assistance to strengthen local government's ability in management, fiscal control, budgeting, accounting, and related activities, 2) designing, facilitating, and initiating special development opportunities, 3) central computer services

and communication systems, and 4) project information, monitoring and assessment systems establishment (Local Development Districts in the Appalachian Region, 1975).

In September 1973, ARC voted to set aside a total of one million dollars in Commission research funds to pay for special demonstration projects planned and sponsored by LDDs. One of the criteria for funding included that the project "must meet a specific and important need in the district where it is to be tried (p. 29)." The seven projects approved by the Commission provide insight into the role of the LDD and the needs in the Region that it must deal with (Local development districts launch demonstration projects, Dec. 73 - Jan. 74).

Data Processing Service

One of the demonstration projects funded included the establishment of a data processing service for the residents of ten counties in the Georgia Mountains Area Planning and Development Commission (GMAPDC). ARC recognized that local governments across the nation have long needed help with their bookkeeping operations and that this need grew more intense every day. Record keeping is a big part of county government. Collecting taxes means keeping records of property evaluations and sending out tax bills. Voter registration, selection of juries, and furnishing public services and utilities all involve local governments in bookkeeping processes. In order to meet this expanded role of the local government, the local counties in the GMAPDC banded together to set up a cooperative computer installation. The equipment is used on a time sharing basis to meet this area's unique needs (Georgia mountains computes the cost, Dec. 73 - Jan. 74).

Community Facilities Utilization

Another LDD project was the community facilities utilization program for the FIVCO Area Development District. This project was designed to meet the need for public facilities big enough to accommodate large numbers of people. Before the schools could be used for this purpose, state laws which control the use of school buses needed to be changed, additional liability insurance needed to be acquired, and the tradition of locking the schools doors when the last teacher and student left needed to be changed. The school facilities and buses were planned to be used for programs that would provide adult education, high nutrition meals for the elderly, and cultural and academic programs in arts and handicrafts (Community facilities utilization program, Dec. 73 - Jan. 74).

Industrial and Economic Development

The Lake Cumberland Area Development District was funded to promote the industrial and economic development of Lake Cumberland's ten county area in eastern Kentucky. This involved preparing an inventory and evaluation of potential business and industrial sites, setting priorities for the development of these sites, designing a plan to raise equity and venture capital, and gathering basic information needed by development agencies in their efforts to bring new industry to the area (Areawide approach to industrial development, Dec. 73 - Jan. 74).

Fiscal and Administrative Operations

Quite similar to the Lake Cumberland Area Development District, the Muscle Shoals Council of Local Governments needed the services of an expert on fiscal and administrative operations. Specific information needs included help in planning public improvements, budget preparation, compliance with grant programs, revision of fiscal and administrative practices and procedures, and implementation of Alabama's laws on real estate taxation. Muscle Shoals planned to make available to other LDDs information concerning solutions developed for specific fiscal and administrative problems, the work schedule developed for attacking those problems, the volume and kinds of help provided and the cost savings realized from technical assistance (Provision of a regional administrator/ fiscal coordinator, Dec. 73 - Jan. 74).

Human Services Coordination

South Carolina Appalachian Regional Planning and Development Commission saw a need to coordinate the delivery of social services. The social service agencies in the area will be helped to design and put into practice a system which will link together the supportive services they furnish. The project includes: 1) designing, developing, and putting into operation a computerized system which will be used to record information on client intake, referral, and follow-up, and to assist clients in making appointments and arranging transportation so they can keep their appointments; 2) developing a social service transportation system to improve the client's accessibility to social services and employment; 3) developing a manual system for information and referral for private and small public

social service agencies that would not be included in the computerized system described above (Human services coordination project, Dec. 73 - Jan. 74).

Community College Programs

The educational leaders of the six county area of the Southern Alleghenies Planning and Development Commission agreed that a need existed for a community college program, particularly in the field of post-secondary technical education. The cost of building such a college from scratch is prohibitive. In this area, educational facilities already exist which are not being used to maximum capacity. The Commission planned to piece the unused assets together, add what was needed, and create a "floating" community college. The students would sit in classrooms at various institutions and get credit in the community college. The Educational Committee of the LDD planned to conduct a needs inventory and a resources inventory. It would then design the specific courses and programs to be offered, the administrative structure needed to put it all together, and the legislative changes required to get the new program started (Design of a floating community college, Dec. 73 - Jan. 74).

Waste Recycling Center

The East Tennessee Development District was given a grant to develop a plan for a solid waste recycling center that would serve 26 counties in eastern and southeastern Tennessee. The development of such a center meets three community needs. First, environmentalists note that we will be buried under our own trash unless we do something. Second, a scarcity of various

materials calls attention to our throw-away mentality. Third, combustible recycled waste can be used as fuel to help meet the energy shortage. The project focuses on analyzing the administrative needs of such a system and investigating alternative ways of organizing and financing it (Tennessee Wasteplex proposal, Dec. 73 - Jan. 74).

Summary of LDD Role

Through reviewing the problems that the LDD's proposals were concerned with, it is possible to gain an understanding of both the role of the LDD and the Regional problems with which LDD personnel must grapple. These include bookkeeping operations, community facilities utilization, industrial and economic development, fiscal and administrative operations, coordination of social services, development of community college programs, and solid waste recycling. These areas were considered to be specific and important needs in the Region by ARC in 1973. A rigorous assessment of the current secondary needs of LDD personnel does not presently exist. Although ARC funded projects to meet these needs in individual development districts, the possibility exists that the problems are more pervasive and other development districts are facing similar situations of need.

Rural Transportation

The problem of rural transportation has been a concern for the federal and state governments. The Appalachian Ohio Regional Transit Association (AORTA) sponsored the Rural and Small-Urban Transit Conference in Athens, Ohio in September in 1975. The 96 conference participants came from seven states and included representatives of small transit systems,

community action agencies, regional planning commissions, counties, municipalities, and agencies for the elderly and handicapped. AORTA, aided by an ARC grant, is demonstrating that many of the transportation needs of people living in nonurban areas can be successfully met. The results of the conference highlighted the contributions already made by many of the existing rural systems and the continuing need for more comprehensive transit programs (Rural transportation spotlighted at Ohio conference, Oct. - Nov. 1975).

Health Planning

Another responsibility that involves information needs is health planning by state and local agencies. A major reorganization of state and local health systems will result from the National Health Planning and Resources Development Act. The new "Health Service Areas" will be responsible for state and local health planning and development in order to bring about a fairer distribution of health care facilities and services in rural and economically depressed areas. The Health Systems Agency will be responsible for gathering health data and preparing long range health systems plans and annual implementation plans for their areas (Appalachian Federal Resource Service, Oct. 1974). Empirical evidence as to whether this level of expertise already exists in Appalachia is not available. The new role to be played by the Health Service Areas suggests a possible area of information need.

Other Government-Related Health Problems

The Conference of Primary Health Care in Appalachia (1975) highlighted a number of other health-related needs that have direct implications for government officials. Carver (1975) noted, "The need for primary care, however defined, which is comprehensive in scope, family-oriented, and readily accessible to the people (whether they themselves perceive the need and are willing and/or able to act) is there (p. 16)." Problems to which government personnel must address themselves include: 1) organizing to provide the services to the community, 2) providing a choice of payment systems to the consumer, 3) providing services of high quality, 4) getting guidance from providers and consumers, and 5) providing incentives to providers.

Brock (1975) noted that in order to recruit patients for primary care, there is a need to educate the community and involve the community leaders, industry, and local government. Baker (1975) pointed out the administrative and management problems which must be overcome. A management system must be devised that could handle patient flow, telephone procedures, billing procedures, and appointment procedures. Bost (1975) discussed the problem of financing primary care in terms of the identification and definition of mechanisms which would provide the financial base needed to support the delivery of primary care. These problems of management, financing, and community involvement all call upon the government personnel to exercise special talents.

Leadership Training

Doak (1973) suggested that the traditionally identified needs of basic skill development, early childhood education and career education are merely symptomatic of a more basic community need. He contends that change cannot come in an isolated education context, that change is needed in the economic, health, religious, government, agricultural, social, welfare, and business life of the community. According to Doak, a need exists to broaden the perspectives of leaders in all areas of community life as to the range of alternatives available to them. If real change is to come about, local government officials need leadership training and a broadening of their perspective to encompass alternative strategies.

Communication

Hamilton (1976) proposed a need for an improved communication system between local government officials and state and federal government officials, as well as between the general citizens and government. A possible solution, suggested by Hamilton, indicated the establishment of two-way audio/video communications between the constituents at remote sites and the political representatives at the state and national government centers. This would allow private citizens to provide input and to review federal and state policies, regulations and programs more easily.

Summary

No rigorous assessment of the primary or secondary needs of federal, state, local, and development district government personnel has yet been undertaken. The literature included several reports of limited secondary

needs. In 1971, important problems that were the concern of the LDDs included data processing, community facilities utilization, industrial and economic development, fiscal and administrative operations, coordination of social services, development of community college programs, and solid waste recycling. Federal and state governments have voiced concern over the continuing need for more comprehensive transit systems for rural areas. Although federal and state government agencies probably have other needs in Appalachia, these are not yet reflected in the literature. The change in the Health Service Areas and the growing emphasis on primary health care present government agencies in Appalachia with many new problems. Finally, leadership training for government personnel was noted as a strong need. Because of the lack of research to date in this area, many other needs may exist which simply have not been cited in the literature.

BUSINESS AND INDUSTRY NEEDS

Economic development has long been a prime concern in the Appalachian Region, and the ARC has realized the importance of it since its beginning. In a five year summary of ARC's activities (The Appalachian Experiment, 1965-1970) it was concluded that it was not yet possible to measure any substantial impact of Commission expenditures in the Region. The Commission had followed its mandate to take a comprehensive approach to the Region's problems. The basic mission of ARC was to assist the Region in attacking its common problems and to promote its economic development on a comprehensive coordinated regional basis. Overall economic indicators outlined below constitute primary needs for Appalachia. Many proposed solutions to these economic problems have been suggested that involve the business and industry interests of the Region. Few of the proposed solutions have been evaluated in terms of their abilities to meet the primary needs.

Overall Economic Indicators

In a report to Congress in 1975 concerning ARC activities, Whitehead noted that between 1965 and 1972, the Region added 744,500 jobs. This increase brought Appalachia's official unemployment rate down to a level more nearly approximating that of the nation. The Region's unemployment rate in the early 1960's had been nearly double that of the nation. Despite this improvement, a continued need exists for economic development. The Region has been hard hit by the recent trend in the national economy. If one goes beyond the official unemployment rates, one will find a large amount of "hidden unemployment." Combining the official and hidden unemployment, i.e.

those who have been discouraged from looking for jobs, the true unemployment figure in 1970 would have been nearly 14 percent and would be even higher now.

A comprehensive study of the educational and information needs of business and industry in Appalachia is not presently available. Nevertheless, investigations on a limited basis have suggested needs for business education, technical assistance for businesses, industrial development, and energy production and conservation. The following two sections describe efforts that have been made in business education and technology transfer in limited parts of Appalachia.

Business Education

Aiding businesses is one aspect of economic development. Pennsylvania State University operates a continuing education program for businesses that includes many diverse services (Marlowe, 1975). The majority of the state of Pennsylvania is officially considered to be in the Appalachian Region, therefore, the needs for continuing education for business discovered by Pennsylvania State University reflect a limited perspective of such needs in the Appalachian Region. The strategy for detecting the business needs of the people of Pennsylvania is accomplished through an organized network of area offices strategically located throughout the state. In his work in the community, the continuing education administrator may have an inquiry about, or discover a potential need for a particular program. He then meets with the client to discuss the educational needs that might be met. One of their programs is designed to meet the needs of local businesses and industries and to upgrade employers in these organizations. The emphasis is on the preparation of engineering technicians, junior accountants, and similar supporting personnel.

Pennsylvania State University has also provided educational programs for all levels of supervision and management. Topics for requested programs include leadership, performance evaluation, motivation, and labor management. The question remains unanswered as to whether the other states in Appalachia share similar needs for business education.

Technical Assistance for Business

Pennsylvania State Continuing Education Office serves to transfer technology which has been developed with public funds by the large government laboratories to those organizations having the greatest need (Marlowe, 1975). Pennsylvania Technical Assistance Program is a technical information system designed to assist business, industry, municipalities, health organizations, governmental units, school districts, and individual entrepreneurs to receive and apply known scientific and technical information for the purpose of achieving economic or social benefits. Operating on requests from clients around the state, the Pennsylvania Technical Assistance Program recognized the need to provide business with such technical assistance. Other states in Appalachia may be in need of such technical assistance and not have the resources to attain it. No empirical data is available in this regard.

Sweet (1976) also addressed the issue of providing technical assistance and continuing education, with special emphasis on the small business person. He suggested that televised seminars for small business persons and business-starters be provided in such areas as transmittal of sales, marketing, technical and process information, and demonstrations of new production processes and information.

Business education and technology transfer have been noted as useful services for the business of Appalachia. No empirical evidence is yet available concerning these secondary needs in other Appalachian states. Another area which has been a major concern of ARC since its beginning is industrial development. The following section reviews the research reports which ARC has produced concerning industrial development.

Industrial Development

Because ARC has long been concerned with the economic development of the Region, a number of its research reports deal with the issue of industrial development. Appalachian Research Reports No. 4, 8, 11, and 13 reflect the progress made in industrial and highway development, as well as the need for continued effort in this matter. In order to improve the competitive position of the Appalachian Region for all industries, the ARC reports proposed several courses of action. The reports suggested that manpower training and education could be improved by establishing a business advisory council at the secondary school level as well as by generating business incentives for in-plant training at established plants. Other critical areas included were transportation, industrial site planning, industrial water development, sewage treatment, federal, state, and local incentives to industry, and community environment. The information that is contained in these reports is rather dated, the latest report was written in 1970. A more recent assessment of possible educational and information needs concerning industrial development is not presently available.

Another important area that relates to business and industry in Appalachia is energy conservation and production. The following sections review the literature concerning energy conservation and production, and the economic and environmental aspects of these.

Energy Conservation

Energy is an important issue for Appalachia, both in terms of conservation and production. Loftus (1975) noted that the Department of Commerce has recognized a need to help industry and businesses conserve energy. Rohrer (1975) reported a program at the University of Pittsburg which focused on initiating and implementing energy conservation programs in industry. The need for such an educational program was documented in Pittsburg by having college graduates who were in training for management positions in the energy companies, in governmental energy agencies, and in commercial and industrial concerns conduct on-site assessments of various industries in the city. Nevertheless, Pittsburg is only one city in Appalachia and is not representative of the more rural areas. Evidence to support a more general secondary need for conservation programs is not yet available.

Energy Production

Energy production introduces a whole new realm of problems for the economic developers of the Region. In a 1969 ARC report, the need was documented to assist states and inter-state areas in planning comprehensive environmental improvement programs especially in watersheds where acid mine drainage is the principal problem (Acid mine drainage in Appalachia, 1969). Demonstration projects were scheduled to elucidate the sources and occurrence of mine drainage and its impact on the area. No systematic study of information or educational needs related to energy production have been conducted. Nevertheless, the importance of the area was emphasized by Whitehead in his 1975 report to Congress. He outlined one of the major problems facing Appalachia as the exploitation of the renewed importance of coal as an energy resource to help bring about a diverse economy (Whitehead, 1975).

Energy, Environment and Economy

Energy, natural resources, and the environment continue to be important areas of ARC concern (ARC Annual Report, 1974). The Appalachian Regional Commission submitted a proposal to the U.S. Office of Education to provide for the integration of energy, environmental, and economic perspectives into a regional planning and support activity. As outlined in the proposal and in view of the current national energy shortage and the national energy policy to decrease the nation's dependence on foreign energy sources, ARC plans to use satellite technology to broadcast programs concerning economic energy development and overall environmental control. Areas of identified interest include: 1) informing regional groups of the developmental implications of national and environmental policies; 2) generating programs for implementing a regional strategy of energy development consistent with regional environmental goals; 3) examining alternative program strategies for meeting the needs of local areas effected by energy development and 4) introducing the results of current research and expert understanding of the effects of national energy policy on: a) regional energy, environmental, and economic development, and b) local areas impacted by energy development by addressing the implications of environmental and social programs to meet local needs.

Other environmental problems that relate to the energy and economic issues in the Region include: 1) mine reclamation, including abandoned mine reclamation work, strip mine reclamation, mine sealing, mine fire extinguishment, mine subsidence control, and acid mine drainage abatement; 2) land stabilization, including landslide control, subsidence control, erosion

control problems, waste disposal, waste utilization, and environmental planning; 3) natural hazards including mudslides, landslides, sink holes, and subsidence; 4) environmental health and socioeconomic development, including schools, hospitals, and health services; 5) land analysis, including the use of remote sensing technology and adapting the analytical system into the state process of planning, investment strategy, regulation and administration; and 6) energy areas impact program which includes an integration of the above programs to meet basic local needs arising from energy development (Proposal to provide for the integration of energy, environment, and economic perspectives into a regional planning and support activity, 1975).

Summary

No comprehensive, systematic assessment of the educational and information needs of business and industry in Appalachia has yet been conducted. The following areas have been suggested as possible secondary needs to meet Appalachia's economic problems:

1) Community contacts in Pennsylvania suggest that business would benefit from continuing education in such areas as supervision and management, as well as from technical assistance.

2) Industrial development is a high priority for economic development in Appalachia.

3) In view of the current energy shortage, with the national emphasis on energy conservation, and the national energy policy of decreasing the nation's dependence on foreign energy sources,

the production and conservation of energy and their impact on the environment and economy are of great concern in Appalachia.

Because of the scarcity of data concerning the overall education and information needs of business and industry in Appalachia, these needs should be viewed as tentative. A more accurate outline of existing needs awaits the completion of systematic needs assessments.

HUMAN RESOURCES NEEDS

The development of human resources is a need which has always existed in Appalachia. In its 1964 report, ARC noted that the primary areas of deprivation in human resources included low incomes, high unemployment, lack of urbanization, deficits in education, and deficits in living standards (Appalachia: A report by the President's Appalachian Regional Comission, 1964). Suggested areas for development of human resources included training and education for employment, vocational rehabilitation for the mentally and physically disabled, employment services, welfare services, health services, mental health services, nutrition, and housing. Few of the secondary needs have been evaluated in terms of their abilities to meet the primary needs.

Overview of Human Resources Needs

Gouin (1972) noted that a community development index must take into account more than just economic factors. It should also include health and illness, social mobility, physical environment, income and poverty, public order and safety, learning, science, and art. Gouin developed a three factor index to describe these "non-economic" factors of development. He applied these three factors to the 60 counties of Central Appalachia. His analysis suggested a real need for the development of human resources in the majority of these counties.

The need for information and education in the area of human resources has not been systematically assessed. The limited information available suggests that educational programs in the areas of social services and recreation for the adults of Appalachia represents potential secondary needs.

The following two sections review the literature concerning social services and recreation.

Social Services

Frazer and Rhodes (1975) surveyed 67 social service agencies in Kentucky to determine their in-service training needs. Not all of these agencies were in Appalachia, therefore the needs expressed in the survey are limited in terms of expressing the Region's unique needs. The representatives of the social service agencies expressed a need for supervisory training and information concerning child welfare, drug abuse, mental health, community issues, and organizational development. They also requested further training in the areas of family counseling, marital therapy, group work, behavior modification, psychotherapy, crisis intervention, reality therapy and casework. No systematic assessment of the needs of social services personnel in Appalachia has yet been conducted; therefore, the above identified needs should be considered tentative.

Recreation

Another area of human resources that has been recognized as a priority by ARC is recreation. Appalachian Research Report No. 14 (1971) explored the feasibility of developing the recreation potential of the Appalachian Highlands. The associated informational and educational needs have not yet been identified.

Adult education is an area of concern in Appalachia in which more extensive research has been conducted. The following section reviews the literature concerning adult education in Appalachia.

Adult Education

The education of adults is one of the most important concerns of human resources personnel. Improvements in this area are occurring, yet much work remains to be done. In 1960, only one-third of the Region's adult population had completed high school as compared to 41.8 percent in the nation. By 1970, 44 percent of Appalachia's adult population had a high school education. At this same time, however, the nation's average in this regard rose to 52 percent. The median number of school years completed by the Region's adult population remained one full school year below the national median (Whitehead, 1975). Along this same line, 11 percent of Appalachian adults (age 25 or older) had completed less than five years of school as compared to the national average of 8.4 percent (Morgan, Singh, Rothenberg, and Robinson, 1975).

A number of researchers have studied the needs of disadvantaged adults in various parts of Appalachia (Gotsick, 1974; Eyster & Heyes, 1972; McMillan, 1973; The interrelating of library and basic education sources for disadvantaged adults, Vols. 1 and 2, 1973; Coping skills categories, 1974; Rawles, 1974a, 1974b).

The Appalachian Adult Education Center at Morehead, Kentucky studied the information needs of disadvantaged adults in four centers in Alabama, South Carolina, Kentucky, and West Virginia. Services of public schools and public libraries in cooperation were studied. The Center identified three groups who had unfulfilled needs in the area of adult education. First, the disadvantaged adults need to know coping skills information for everyday problem solving. Second, adult basic education teachers need to know coping skills information for teaching and counseling. Third, library staff members need to know

about disadvantaged adults and their needs. The Center defined coping skills as recognizing a problem as a need for information, actively seeking information, and applying new knowledge to personal problems.

The Center also surveyed the state librarians of the 13 Appalachian states by telephone to gather information on the existing library services and materials for disadvantaged adults. The need for expertise in appropriate materials selection was also expressed.

Based on extensive work with adult basic education programs and in public library services for disadvantaged adults, the Center developed coping skills categories. The coping skills categories represent areas of informational needs of disadvantaged adults. These include: aging, children, community, education, family, free time, health, home, jobs, legal rights, money management, moving, religion, transportation, and understanding self and others. Rawles (1974) added that rural adults may have additional informational needs such as crops, farming, sanitation, and water supply.

Many disadvantaged adults in Appalachia need to learn to read and to apply their reading skills. The Appalachian Adult Education Center concluded that, "there are enormous needs to expand educational services to adults in the United States, both in terms of instructional and library services (p. 40, The interrelation of library and basic education services for disadvantaged adults, Vol. 2, 1973)."

Summary

The human resources needs of Appalachia have not been extensively studied. A more thorough determination of the needs awaits a comprehensive systematic needs assessment. Based on the limited information available at the present time, the following secondary needs are suggested:

1) continuing education for social service personnel;
2) education concerning developing Appalachian's recreation potential;
3) education of Appalachia's adult population and of the teachers needed to teach the adults.

Other human resource needs may exist in Appalachia which are more pressing than those listed above. A more adequate identification of human resource needs in the Region can be obtained through a comprehensive, systematic assessment.

SUMMARY AND CONCLUSIONS

A literature review was conducted which included the continuing education needs in the areas of education, medicine and health, business and industry, human resources, and government. The literature review process involved three steps:

1) A review of research reports prepared by the Appalachian Regional Commission or contracting agencies.

2) A review of documents relating to Appalachian needs from materials identified through conventional library and computerized searches.

3) A review of existing materials describing local, county, district, or statewide needs within portions of the Appalachian Region.

Over seventy-five documents were included in the review. Evidence was obtained for the existence of a wide variety of needs. Demographic data provides evidence of many primary needs, and a wide range of solutions have been proposed to meet these needs. However, where primary needs were indicated by general social and economic conditions, in many areas no literature was identified to document specific needs. Few of the solutions proposed to meet the primary needs have been evaluated in terms of their abilities to meet those needs. In addition, assessment of the current ability to implement the solution and analysis of the discrepancy between the ability to implement the

solution and the present status are generally nonexistent. Thus the strength of many of the identified needs rests on several unproven assumptions.

The literature review documented the existence of many areas of needs for AESP programming. However, the omission of evidence regarding additional areas of needs in the literature does not mean that these needs do not exist. A short summary of the needs identified in each of the five program content areas follows.

1. Education Needs

The education needs of Appalachia involve the full range of educational personnel and students. Inservice education for teachers has been identified as a broad secondary need of the Region. Specific inservice training needs of teachers have been proposed in the areas of reading, special education, early childhood education, information resources, career counseling, career education, vocational education, etc. Other need areas emphasized in the literature include individualized instruction, especially for disadvantaged students; developmental programs for improving students' skills in mathematics, reading, communication and socialization; and techniques for increasing parental involvement in the schools.

2. Medical and Health Needs

Medical and health services pose a special problem in Appalachia, not only in terms of continuing education for medical and health personnel, but also in providing for the consumer's needs. The medical and health personnel include physicians, physician's assistants, nurses, mental health personnel, and allied health personnel. Consumer needs

in the health area include both education and services. While the literature confirms the existence of general primary and secondary medical and health needs, comprehensive assessments of the Region's specific needs are not available.

3. Government Needs

Government operates at many levels in Appalachia. Federal, state, and local government personnel in Appalachia have many informational needs that are emphasized by the isolation caused by the terrain. In Appalachia another unique level of government, the Local Development District (LDD), was instituted to help bridge the gap between the largeness of the state governments and the smallness of local jurisdictions. No vigorous assessment of the primary and secondary needs of federal, state, local, and development districts personnel has yet been undertaken. However, important secondary needs that have been of concern to the LDD's have included data processing, community facilities utilization, industrial and economic development, fiscal and administrative operations, coordination of social services, development of community college programs, and solid waste recycling. Federal and state governments have voiced concern over the continuing need for more comprehensive transit systems for rural areas. The change in the health services areas and the growing emphasis on primary health care present government agencies in Appalachia with many new problems. Finally, leadership training for government personnel was noted as a strong need. Because of the lack of research to date in this area, many other primary and secondary needs undoubtedly exist which simply have not been cited in the literature.

4. Business and Industry

Economic development has long been a prime concern in the Appalachian Region, and ARC has realized the importance of this development since its beginning. Though adequate needs assessments have not been conducted, the indications are that there are secondary needs in the areas of continuing education programs for business, technical assistance for business, manpower training, planning for industrial development, energy conservation and production, and in the area of the interplay between economic energy development and environmental control. Because of the paucity of data concerning the overall education and information needs of business and industry in Appalachia, these needs should be viewed as tentative.

5. Human Resources and Services Needs

The development of human resources is one of the most pressing needs of Appalachia. Areas of primary need deprivation in human resources identified by ARC include low income, high unemployment, lack of urbanization, deficits in education, and deficits in living standards. Areas of development of human resources which have been mentioned by ARC include education for employment, vocational rehabilitation for the mentally and physically disabled, employment services, nutrition, and housing. The human resource needs of Appalachia have not been extensively studied. Several secondary needs, however, are based on the limited information available at this time. These include continuing education for social service personnel, education relative to Appalachia's recreational development, and education of Appalachia's adult population and of the teachers needed for adult education.

In conclusion, demographic data strongly supported the existence of primary needs in the five programming areas reviewed, i.e. education, medicine and health, business and industry, human resources, and government. The many proposed solutions urgently need to be assessed in terms of their abilities to meet the primary needs. In addition, the current level of ability to implement appropriate solutions needs to be assessed, and the discrepancy between the current status and the ability to implement the solution needs to be analyzed.

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Dr. Harold E. Morse
Director, AESP
Appalachian Regional Commission
1666 Connecticut Avenue
Washington, D.C. 20235

Dr. Nofflet Williams
Acting Director, RCC
AESP
301 Bradley Hall
University of Kentucky
Lexington, KY 40506

Ms. Alice Beckman
AESP RESA Director
Chautauqua Board of Cooperative
Educational Services (BOCES)
Fredonia Stockton Road
Fredonia, NY 14063

Mr. Douglas Cross
AESP RESA Director
Clinch-Powell Educational Cooperative
Tazewell, TN 37879

Mr. Morley Jones
AESP RESA Director
DILENOWISCO Educational Cooperative
1032 Virginia Avenue
Norton, VA 24272

Mr. Frank Peto
AESP RESA Director
Maryland RESA
110 Washington Street
Cumberland, MD 21502

Mr. Chuck Nickel
AESP RESA Director
TARESA
711 Arcadia Circle
Huntsville, AL 35801

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